Reviewed by: RO
4/19/2013
14,2013 checked by N
4/22/13

MEMORANDUM

TO: Mr. Terry Taylor

Anderson Mulholland and Associates

DATE: April 14, 2013

FROM: R. Infante

Data Validation

FILE: JB28370

JB28557

BMSMC, Building 5 Area, PR

SM04.00.06

Accutest Job Numbers: JB28370; JB28370r; JB28557; and JB 28557r

SUMMARY

RE:

Full validation was performed on the data for six (6) soil samples and one trip blank analyzed selected volatile organic compound by method SW846-8260B an selected alcohols (methanol and isopropylalcohol) by method SW846-8015C DAI. The samples were collected at the Building 5 Area, Humacao, PR site From February 6 to 8, 2013 and submitted to Accutest Laboratories of Dayton, New Jersey that analyzed and reported the results under delivery groups (SDG) JB28370; JB28370r; JB28557; and JB 28557r.

The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "USEPA Region 2, SOP HW-24, Validating Volatile Organic Compounds by GC/MS, SW-846 Method 8260B (August 2009-Revision 2), the USEPA National Functional Guidelines for Low Concentration Organic Data Review (August 2009-Revision 2), the USEPA National Functional Guidelines for Organic Data Review for Low Concentration Water (SOP HW-13, August 2009-Revision 3); (noted herein as the "primary guidance documents"). Also, QC criteria from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update IV. December 1998)." are utilized. The guidelines were modified to accommodate the non-CLP methodology. The QC criteria and data validation actions listed on the data review worksheets are from the primary quidance document, unless otherwise noted.

In general the data are valid as reported and may be used for decision making purposes. The data results are acceptable for use; some of the results were qualified. Result for Methanol and Isopropyl alcohol in samples JB28370-1R; JB28370-2R; JB28370-3R; JB28370-4R; JB28370-5R; and JB28557-1R were rejected (R) due samples analyzed after the holding time limits.

SAMPLES

The samples included in the review are listed below

FIELD SAMPLE ID	LABORATORY ID	DATE	ANALYSIS
AREAEC1_BOT	JB28370-1	02/06/13	VOCs
AREAEC1_SW	JB28370-2	02/06/13	VOCs
AREAEC2_BOT	JB28370-3	02/07/13	VOCs
AREAEC3_BOT	JB28370-5	02/07/13	VOCs
AREAEC1_BOT	JB28370-1R	02/06/13	ALCOHOLS
AREAEC1_SW	JB28370-2R	02/06/13	ALCOHOLS

FIELD SAMPLE ID	LABORATORY ID	DATE	ANALYSIS
AREAEC2_BOT	JB28370-3R	02/07/13	ALCOHOLS
AREAEC3_SW	JB28370-4R	02/07/13	ALCOHOLS
AREAEC3_BOT	JB28370-5R	02/07/13	ALCOHOLS
AREAEC4_BOT	JB28557-1	02/08/13	VOCs
AREAEC4_BOT	JB28557-1R	02/08/13	ALCOHOLS

REVIEW ELEMENTS

Sample data were reviewed for the following parameters, where applicable to the method

- o Agreement of analysis conducted with chain of custody (COC) form
- o Holding time and sample preservation
- o Gas chromatography/mass spectrometry (GC/MS) tunes
- o Initial and continuing calibrations
- o Method blanks/trip blanks/field blank
- Surrogate spike recovery
- o Matrix spike/matrix spike duplicate (MS/MSD) results
- o Internal standard performance
- o Field duplicate results
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- o Quantitation limits and sample results

DISCUSSION

Agreement of Analysis Conducted with COC Request

Sample reports corresponded to the analytical request designated on the chain-of-custody form.

Holding Times and Sample Preservation

The cooler temperatures were within the QC acceptance criteria of $4^{\circ}C \pm 2^{\circ}C$.

Sample preservation was acceptable.

Samples analyzed within method recommended holding time except for the followings:

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION			
JB28370-1R	02/06/13	03/20/13	_	Rejects (R) results			
JB28370-2R	02/06/13	03/20/13	_	Rejects (R) results			
JB28370-3R	02/07/13	03/20/13	-	Rejects (R) results			
JB28370-4R	02/07/13	03/20/13	-	Rejects (R) results			
JB28370-5R	02/07/13	03/20/13	-	Rejects (R) results			
JB28557-1R	02/08/13	03/20/13	_	Rejects (R) results			
The sample analyzed 40 days after 7 days holding time expiration. All results are rejected.							

GC/MS Tunes

The frequency and abundance of bromofluorobenzene (BFB) tunes were within the QC acceptance criteria. All samples were analyzed within the tuning criteria associated with the method.

Initial and Continuing Calibrations

VOC

The percent relative standard deviations (%RSDs) and response factors (RFs) of all target analytes were within the QC acceptance criteria in the initial calibration. Correlation coefficients (r²) of target analytes were within the QC acceptance criteria. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard. Initial and continuing calibration meets method performance criteria.

Alcohols

The percent relative standard deviations (%RSDs) and response factors (RFs) of all target analytes were within the QC acceptance criteria in the initial calibration and continuing calibration in at least one of the two signals.

Method Blank/Trip Blank/Field Blank

Target analytes were not detected in laboratory method blanks for VOCs and alcohols.

No field/trip/equipment blanks analyzed with this data package.

Surrogate Spike Recovery

The surrogate recoveries were within the laboratory QC acceptance limits in all samples analyzed.

MS/MSD

VOCs

Matrix spike was performed on samples JB29432-9MS/-9MSD; JB28374-6MS/-6MSD; JB28044-7MS/-7MSD; JB28636-4MS/-4MSD; 28706-4MS/-4MSD. Recoveries for MS/MSD and RPD were within laboratory control limits.

<u>Alcohols</u>

Matrix spike was performed on samples JB31283-15MS/-15MSD. Recoveries for MS/MSD were within laboratory control limits; RPD for MS/MSD were within control limits.

Internal Standard Performance

VOCs

Samples were spiked with the method specified internal standard. Internal standard performance met the QC acceptance criteria in all sample analyses.

Field Duplicate Results

Field duplicate not analyzed as part of this data set. Laboratory duplicates for VOC were samples JB29432-10/JB28370-10 DUP. RPD results were within laboratory/recommended control limits except for the followings:

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Xylenes	0.19	1.2	0.39	102	No action taken; low
(total)					concentration of hit

LCS/LCSD Results

VOCs

The laboratory analyzed one LCS (blank spike) associated with each matrix from this data set. The % recoveries of all spiked analytes were within the laboratory QC acceptance limits.

Alcohols

The laboratory analyzed one LCS (blank spike) associated with each matrix from this data set. The % recoveries of all spiked analytes were within the laboratory QC acceptance limits.

Quantitation Limits and Sample Results

Dilutions were required with this data set.

Méndez

IC # 1888

Calculations were spot checked.

Certification

The following samples JB28370-1; JB28370-2; JB28370-3; JB28370-5; JB28370-1R; JB28370-2R; JB28370-3R; JB28370-4R; JB28370-5R; 28557-1; and jb28557-1R were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. Some of the results were qualified. The results are valid except the alcohol results that were rejected.

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Report of Analysis

Ву RS

ET

Page 1 of 1

AREAEC1_BOT Client Sample ID:

File ID

Y131352.D

D205472.D

Lab Sample ID: Matrix:

JB28370-1 SO - Soil

SW846 8260B SW846 5035

DF

1

Date Sampled: Date Received:

02/06/13 02/08/13

Percent Solids:

73.8

Method: Project:

Run #1 a

Run #2 b

BMSMC, Building 5 Area, PR

n/a

n/a

Prep Date

02/08/13 13:00

02/08/13 13:00

Prep Batch Analytical Batch VY5654 VD8383

Final Volume **Initial Weight** Methanol Aliquot

Run #1 5.0 gRun #2 4.4 g

5.0 ml

Analyzed

02/25/13

02/14/13

100 ul

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	36.0	14	2.3	ug/kg	
71-43-2	Benzene	0.85	1.4	0.16	ug/kg	J
100-41-4	Ethylbenzene	2.3	1.4	0.36	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	1.6	6.8	1.0	ug/kg	J
108-88-3	Toluene	ND	1.4	0.14	ug/kg	
1330-20-7	Xylene (total)	14.3	1.4	0.19	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7	Dibromofluoromethane	108%	97%	70-1	30%	
17060-07-0	1,2-Dichloroethane-D4	109%	101%	70-1	22%	
2037-26-5	Toluene-D8	106%	99%	81-1	27%	
460-00-4	4-Bromofluorobenzene	105%	100%	66-1	32%	

(a) Sample analyzed outside the holding time but the original run within holding time.

(b) Confirmation run.



ND = Not detected

MDL - Method Detection Limit

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E = Indicates value exceeds calibration range

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Report of Analysis

By

ET

Page 1 of 1

Client Sample ID: AREAEC1_SW

Lab Sample ID: Matrix:

Method:

JB28370-2

SO - Soil

SW846 8260B SW846 5035

Date Sampled: Date Received:

02/06/13 02/08/13

Percent Solids:

79.3

Project:

File ID

BMSMC, Building 5 Area, PR

Prep Date Prep Batch 02/08/13 13:00 n/a

Analytical Batch

VD8383

Run #1 a Run #2

Initial Weight Run #1 5.7 g

D205473.D

Final Volume $5.0 \, ml$

DF

Methanol Aliquot

100 ul

Analyzed

02/14/13

Run #2

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	680	120	ug/kg	
71-43-2	Benzene	ND	68	8.1	ug/kg	
100-41-4	Ethylbenzene	471	68	18	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	340	51	ug/kg	
108-88-3	Toluene	ND	68	7.2	ug/kg	
1330-20-7	Xylene (total)	1710	68	9.5	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7	Dibromofluoromethane	99%		70-1	30%	
17060-07-0	1,2-Dichloroethane-D4	102%		70-1	22%	
2037-26-5	Toluene-D8	99%		81-1	27%	
460-00-4	4-Bromofluorobenzene	99%		66-1	32%	

(a) Diluted due to high concentration of target compound.



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Report of Analysis

Page 1 of 1

Client Sample ID:	AREAEC2_	BOT
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Lab Sample ID: JB28370-3 Matrix: SO - Soil

Method: SW846 8260B SW846 5035 Date Sampled: 02/07/13 Date Received: 02/08/13 Percent Solids: 76.6

Project: BMSMC, Building 5 Area, PR

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D205440.D	1	02/13/13	ΕŤ	02/08/13 13:00	n/a	VD8381
Run #2							

Initial Weight Final Volume Methanol Aliquot Run #1 5.0 ml 100 ul 5.0 gRun #2

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	16000	810	140	ug/kg	
71-43-2	Benzene	ND	81	9.6	ug/kg	
100-41-4	Ethylbenzene	782	81	21	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	7390	400	60	ug/kg	
108-88-3	Toluene	793	81	8.5	ug/kg	
1330-20-7	Xylene (total)	3190	81	11	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	94%		70-1	30%	
17060-07-0	1,2-Dichloroethane-D4	98%		70-1	22%	
2037-26-5	Toluene-D8	99%		81-1	27%	
460-00-4	4-Bromofluorobenzene	101%		66-1	32%	



ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

By

SJM

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Client Sample ID: AREAEC3_BOT

File ID

 $\hat{5}.0\,g$

I181544.D

Lab Sample ID:

JB28370-5

Matrix:

SO - Soil

SW846 8260B SW846 5035

Analyzed

02/15/13

Date Sampled:

n/a

02/07/13 02/08/13

Date Received:

Percent Solids:

74.4

Method: Project:

BMSMC, Building 5 Area, PR

DF

1

Analytical Batch

Prep Date Prep Batch

02/08/13 13:00

VI7333

Run #1 Run #2

Initial Weight

Run #1

Run #2

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	143	13	2.3	ug/kg	
71-43-2	Benzene	3.4	1.3	0.16	ug/kg	
100-41-4	Ethylbenzene	0.89	1.3	0.35	ug/kg	J
108-10-1	4-Methyl-2-pentanone(MIBK)	6.0	6.7	1.0	ug/kg	J
108-88-3	Toluene	3.0	1.3	0.14	ug/kg	
1330-20-7	Xylene (total)	34.8	1.3	0.19	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
1868-53-7	Dibromofluoromethane	93%		70-1	30%	
17060-07-0	1,2-Dichloroethane-D4	100%		70-1	22%	
2037-26-5	Toluene-D8	103%		81-1	27%	
460-00-4	4-Bromofluorobenzene	115%		66-1	32%	





MDL - Method Detection Limit

RL = Reporting Limit

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



E = Indicates value exceeds calibration range

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Accutest LabLink@723561 11:12 08-Apr-2013

Report of Analysis

Client Sample ID: AREAEC1_BOT

Lab Sample ID: JB28370-1R 02/06/13 Date Sampled: Matrix: SO - Soil 02/08/13 Date Received: Method: SW846-8015C (DAI) Percent Solids: 73.8

Project: BMSMC, Building 5 Area, PR

File ID DF Analyzed By Prep Date Prep Batch Analytical Batch Run #1 a GH92225.D 03/20/13 XPL GGH4266 1 n/a n/a Run #2

Initial Weight Run #1 5.2 g

Run #2

CAS No. Compound Result RLMDL Units Q 67-63-0 Isopropyl Alcohol ND 130 61 ug/kg 67-56-1 Methanol 13800 260 62 ug/kg CAS No. Surrogate Recoveries Run#1 Run#2 Limits 111-27-3 Hexanol 91% 58-133% 111-27-3 Hexanol 73% 58-133%

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Report of Analysis

Page 1 of 1

Client Sample ID:	AREAEC1_SW		
Lab Sample ID:	JB28370-2R	Date Sampled:	02/06/13
Matrix:	SO - Soil	Date Received:	02/08/13
Method:	SW846-8015C (DAT)	Percent Solide	79.3

BMSMC, Building 5 Area, PR Project:

	File ID	DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
Run #1 a	GH92226.D	1	03/20/13	XPL	n/a	n/a	GGH4266
Run #2							

Run #1 Run #2	Initial Weight 5.4 g							
CAS No.	Compound	Result	RL	MDL	Units	Q		
67-63-0 67-56-1	Isopropyl Alcohol Methanol	ND 50500	120 230	54 56	ug/kg ug/kg			

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	96%		58-133%
111-27-3	Hexanol	128%		58-133%

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID:	AREAEC2_BOT		
Lab Sample ID:	JB28370-3R	Date Sampled:	02/07/13
Matrix:	SO - Soil	Date Received:	02/08/13
Method:	SW846-8015C (DAI)	Percent Solids:	76.6

BMSMC, Building 5 Area, PR Project:

File ID DF Analyzed By Prep Date Run #1 a GH92227.D 1 03/20/13 XPL n/a	Prep Batch n/a	Analytical Batch GGH4266

Run #2

Run #1 5.0 g Run #2		Initial Weight		
	Run #1	1 5.0 g		

CAS No.	Compound	Result	RL	MDL	Units	Q
67-63-0 67-56-1	Isopropyl Alcohol Methanol	31700 26800	130 260	61 62	ug/kg ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
111-27-3	Hexanol	94%		58-1	33%	
111-27-3	Hexanol	75%		58-1	33%	

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

Client Sample ID:	AREAEC3_SW		
Lab Sample ID:	JB28370-4R	Date Sampled:	02/07/13
Matrix:	SO - Soil	Date Received:	02/08/13
Method	SW846-8015C (DAT)	Percent Solids:	80.7

BMSMC, Building 5 Area, PR Project:

Initial Weight

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 a	GH92237.D	1	03/20/13	XPL	n/a	n/a	GGH4266
Run #2 a	GH92228.D	1	03/20/13	XPL	n/a	n/a	GGH4266

Run #1 Run #2	0.50 g 5.0 g							
CAS No.	Compound	Result	RL	MDL	Units	Q		
67-63-0 67-56-1	Isopropyl Alcohol Methanol	255000 29100 ^b	1200 250	580 59	ug/kg ug/kg			
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its			
111-27-3 111-27-3	Hexanol Hexanol	125% 1 02 %	102% 98%		133% 133%			

(a) Sample analyzed outside the holding time per client's request.

(b) Result is from Run# 2



ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Report of Analysis

Page 1 of 1

Client Sample ID:	AREAEC3_BOT		
Lab Sample ID:	JB28370-5R	Date Sampled:	02/07/13
Matrix:	SO - Soil	Date Received:	02/08/13
Method:	SW846-8015C (DAI)	Percent Solids:	74.4

Project: BMSMC, Building 5 Area, PR

D #1 3	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 a	GH92229.D	1	03/20/13	\mathbf{XPL}	n/a	n/a	GGH4266
Run #2							

Initial Weight Run #1

5.0 gRun #2

CAS No. Compound Result RLMDL Units Q 67-63-0 ND ug/kg Isopropyl Alcohol 130 63 67-56-1 Methanol 47200 270 64 ug/kg CAS No. Surrogate Recoveries Run#1 Run# 2 Limits 111-27-3 Hexanol 93% 58-133% 111-27-3 Hexanol 100% 58-133%

(a) Sample analyzed outside the holding time per client's request.



ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

By

RS

Page 1 of 1

Client Sample ID: AREAEC4_BOT

Lab Sample ID:

JB28557-1

Date Sampled: 02/08/13

Matrix: Method: SO - Soil SW846 8260B SW846 5035

DF

1

n/a

Date Received: 02/12/13

Project:

Percent Solids: 84.3

BMSMC, Building 5 Area, PR

Analyzed

02/15/13

Prep Batch Prep Date

02/12/13 13:00

Analytical Batch

VY5640

Run #1

Run #2

Initial Weight

Y131017.D

File ID

Run #1 4.9 g

Run #2

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	151	12	2.0	ug/kg	
71-43-2	Benzene	2.3	1.2	0.14	ug/kg	
100-41-4	Ethylbenzene	0.46	1.2	0.32	ug/kg	J
108-10-1	4-Methyl-2-pentanone(MIBK)	41.8	6.1	0.91	ug/kg	
108-88-3	Toluene	0.37	1.2	0.13	ug/kg	J
1330-20-7	Xylene (total)	4.5	1.2	0.17	ug/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
1868-53-7	Dibromofluoromethane	105%		70-13	30%	

17060-07-0 1,2-Dichloroethane-D4 97% 70-122% 2037-26-5 Toluene-D8 107% 81-127% 4-Bromofluorobenzene 460-00-4 94%



ND = Not detected

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J = Indicates an estimated value

B = Indicates analyte found in associated method blank



Report of Analysis

Page 1 of 1

GGH4266

Client Sample ID:	AREAEC4_BOT		
Lab Sample ID:	JB28557-1R	Date Sampled:	02/08/13
Matrix:	SO - Soil	Date Received:	02/12/13
Method:	SW846-8015C (DAI)	Percent Solids:	84.3

03/20/13

Method: SW846-8015C (DAI) Project: BMSMC, Building 5 Area, PR

GH92230.D

File ID Prep Date Analytical Batch DF Analyzed By Prep Batch XPL

n/a

Run #1 a Run #2

Initial Weight Run #1 5.1 g Run #2

CAS No. Compound Result RLMDL Units Q 67-63-0 Isopropyl Alcohol ND120 54 ug/kg 67-56-1 Methanol ND 230 **55** ug/kg CAS No. Surrogate Recoveries Run#1 Run# 2 Limits 111-27-3 Hexanol 95% 58-133% 111-27-3 Hexanol 120% 58-133%

(a) Sample analyzed outside the holding time per client's request.



n/a

ND = Not detected

MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank





CHAIN OF CUSTODY

PAGE __ OF __

LABCRATORIES			2235	Route 130	. Dayton	NT 68810)			:		750	X TOX	300	273	109	,	Boste Ord	er Confict #			
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JB28370R: Chain of Custody

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CHAIN OF CUSTODY

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	Project Number:JB28370
	Date:02/6-7/2013
REVIEW OF VOLATILE ORGA	
The following guidelines for evaluating volatile organics we actions. This document will assist the reviewer in using producision and in better serving the needs of the data users. The USEPA data validation guidance documents in the following of HW-24, Standard Operating Procedure for the Validation of C8260B (August, 2009-Revision 2), the USEPA National Concentration Organic Data Review (SOW SOM01.2 SOP HV National Functional Guidelines for Organic Data Review for Lo2009-Revision 3). Also, QC criteria from "Test Methods for Methods SW-846 (Final Update III, December 1996)," specific QC criteria and data validation actions listed on the data reviews.	ofessional judgment to make more informed the sample results were assessed according to order of precedence: USEPA Region 2, SOP Organic Data Acquired using SW-846 Methodial Functional Guidelines for Low/Medium W-33, August 2009 – Revision 2), the USEPA ow Concentration Water (SOP HW-13, August, or Evaluating Solid Waste, Physical/Chemical cally for Methods 8000/8260B are utilized. The
document, unless otherwise noted.	
The hardcopied (laboratory name) _Accutest	
Lab. Project/SDG No.:JB28370	Sample matrix:Soil
No. of Samples:4	
Trip blank No.:Field blank No.:	
Equipment blank No.:	
Field duplicate No.:	
X Data CompletenessX Holding TimesX GC/MS Tuning	X Laboratory Control SpikesX Field DuplicatesX Calibrations
X Internal Standard Performance X Blanks	X Compound Identifications X Compound Quantitation
X Surrogate Recoveries	X Quantitation Limits
X Odriogate RecoveriesX Matrix Spike/Matrix Spike Duplicate	Quantitation Limits
Overall Comments:_Selected_VOC's_by_SW846-8260B	3
Definition of Qualifiers:	
J- Estimated results	
U- Compound not detected	
R- Rejected data	
UJ- Estimated nondetect	
Reviewer: Reviewer:	
Date:04/14/2013't	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
,		

All criteria were metX
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION
JB28370-1	02/06/13	02/25/13	-	No action; sample analyzed outside holding time but the original run within holding time.

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles. Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 3°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

Note: Sample JB28370-4 collected on 02/07/13 in chain-of-custody but not analyzed for VOCs.

		Crite	All criteria were metX ria were not met see below
GC/MS TUNING			
The assessment of standard tuning QC	-	determine if the sample instrur	nentation is within the
_XThe BFB p	erformance results were	reviewed and found to be within t	the specified criteria.
_XBFB tuning	was performed for every	12 hours of sample analysis.	
f no, use professi qualified or rejecte		ine whether the associated data	a should be accepted,
List	the	samples	affected:

If mass calibration is in error, all associated data are rejected.

4

All criteria were met _X
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Dates of continuing calibration: 02/13/13 02/14/13 02/15/13 02/25/13	
Instrument ID numbers:GCMSDGCMSIGCMSY	
Matrix/Level:Aqueous/low	

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
		Initial an	d continuing calibration	meet method specific crit	eria

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be < 15 % regardless of method requirements for CCC.

All %Ds must be < 20% regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were metN/A
Criteria were not met
and/or see below

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
			fic_criteria	
Field <u>/</u> Equipmen	t/Trip blank			
DATE ANALYZED	LAB ID	LEVEL! Matrix	COMPOUND	CONCENTRATION UNITS
_No_field/equip	oment/trip_blank	s_analyzed_wi	th_this_data_package	

All criteria were metN/A	
Criteria were not met	
and/or see below	

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is \leq sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
					l
		-			
		<u> </u>			
				_	

All criteria were metX
Criteria were not met
and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

SAMPLE ID		SURROGA	ACTION		
	1,2-DCA	DBFM	TOL-d8	BFB	
_All_surrogate_reco	overies_withir	n_laboratory_co	ntrol_limits		
QC Limits* (Aqueo	ue)				
LL_to_UL	•	to	to	to	
QC Limits* (Solid-L					
LL_to_UL_	•	to	to	to	
QC Limits* (Solid-N					
LL_to_UL_		to	to	to	
					
1,2-DCA = 1,2-Dich	nloromethane	-d4	TOL-d8	= Toluene-d8	
DBFM = Dibromofle			BFB = 6	Bromofluoroben	zene

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%. If anyone surrogate in a fraction shows < 10 % recovery.

All criteria were metX	
Criteria were not met	
and/or see below	

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:JB28 Sample ID:JB28	432-9MS/-9MSD 3374-6MS/-6MSD 8044-2M7/-7MSD 8636-4MS/-4MSD		_ _	Matrix/Level: Matrix/Level: Matrix/Level: Matrix/Level:	_Soil _Soil
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
_MS/MSD_recove	ries_and_RPD_within	_laborat	tory_con	trol_limits	

^{*} QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

^{*} If QC limits are not available, use limits of 70 – 130 %.

All criteria were metX
Criteria were not met
and/or see below

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Level/Unit:		
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _X
Criteria were not met
and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCS ID	COMPOUND	% R	QC LIMIT
Recoverie	s_within_laborat	tory_control_limits		

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? <u>Yes</u> or No. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were metN/A Criteria were not met and/or see below
IX.	FIELD DUPLICATE PRECISION	
	Sample IDs:	Matrix:

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field duplic	ate analy	zed with this data p	ackage. Laboratory dup	olicate us	sed to assess precision.
	RPD	within laboratory ar	nd generally acceptable	control	imits.

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

		All criteria were metX Criteria were not met and/or see below
IX.	LABORATORY DUPLICATE PRECISION	
	Sample IDs:JB29432-10/-10_DUP	Matrix:_Soil

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Xylene (total)	0.19	1.2	0.39	102	No action; low concentration of hit

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were metX
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
_Internal_s	tandard_area_within_	_laboratory_cor	itrol_limits		
Actions:					

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO - 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were metX
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB28370-3

Acetone

RF = 0.056

[] = (48201)(50)/(217164)(0.056)

= 198 ppb OK

All criteria were metX
Criteria were not met
and/or saa halow

XII.	Ql	L	۸۸	ITI	T	TI	AL.	.1	t IN	A	TO	1
All.	wι	"	٦ľ	N I I	1 I F	٩li	VI	¥	LIN	ИH	10	2

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
	-	

3.	Percent Solids
	List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R) $\,$

	Project Number:JB28370
	Date:02/06-07/2013
REVIEW OF VOLATILE ORGA The following guidelines for evaluating volatile organics we actions. This document will assist the reviewer in using pro-	ere created to delineate required validation of essional judgment to make more informed
decision and in better serving the needs of the data users. The USEPA data validation guidance documents in the following of HW-24, Standard Operating Procedure for the Validation of C8260B (August, 2009-Revision 2), the USEPA National	order of precedence: USEPA Region 2, SOP Organic Data Acquired using SW-846 Method
Concentration Organic Data Review (SOW SOM01.2 SOP HV National Functional Guidelines for Organic Data Review for Lo 2009-Revision 3). Also, QC criteria from "Test Methods for Methods SW-846 (Final Update III, December 1996)," specifica QC criteria and data validation actions listed on the data review.	V-33, August 2009 – Revision 2), the USEPA w Concentration Water (SOP HW-13, August, Evaluating Solid Waste, Physical/Chemical ally for Methods 8000/8015C are utilized. The
document, unless otherwise noted. The hardcopied (laboratory name) _Accutest reviewed and the quality control and performance data summa	data package received has been rized. The data review for VOCs included:
Lab. Project/SDG No.:JB28370 No. of Samples:5	Sample matrix:Soil
Trip blank No.:	
Equipment blank No.:Field duplicate No.:	
X Data Completeness X Holding Times	X Laboratory Control Spikes X Field Duplicates
N/A_ GC/MS Tuning	X Calibrations
N/A_ Internal Standard Performance	X Compound Identifications
X Blanks	X Compound Quantitation
X Surrogate Recoveries	X Quantitation Limits
X Matrix Spike/Matrix Spike Duplicate	
Overall Comments:_Selected_alcohols_(methanol_and_ic_(DAI)	
Definition of Qualifiers:	
J- Estimated results	
U- Compound not detected	
R- Rejected data	
UJ- Estimated nondetectr	
Reviewer: Review	
Date:04/14/2013	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were metX
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION	
JB28370-1R	02/06/13	03/20/13	_	Rejects (R) results	
JB28370-2R	02/06/13	03/20/13	-	Rejects (R) results	
JB28370-3R	02/07/13	03/20/13	-	Rejects (R) results	
JB28370-4R	02/07/13	03/20/13	-	Rejects (R) results	
JB28370-5R	02/07/13	03/20/13	-	Rejects (R) results	
All samples analyzed 42 and 41 days after 7 days holding time expiration. All results are rejected.					

<u>Criteria</u>

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles. Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 + 2 °C): 3°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

	All criteria were metN/A
Criteria	were not met see below

i	2	~ 1	ħ.A	C	TI	11	N	N	0
и	171	,	w	•			M	II V	

The assessment of the tuning results is to determine standard tuning QC limits	if the sample instrumentation is	within the				
N/A_ The BFB performance results were reviewed a	nd found to be within the specified	criteria.				
N/A_ BFB tuning was performed for every 12 hours	N/A_ BFB tuning was performed for every 12 hours of sample analysis.					
f no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.						
List the	samples	affected:				

If mass calibration is in error, all associated data are rejected.

All criteria were metX
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	09/24/12
Dates of continuing calibration:_	03/20/13
Instrument ID numbers:	GCGH
Matrix/Level:Aqueous/mediur	n

DATE LAB FILE ID#		CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED				
Initial and continuing calibration meets method specific requirements in at least one of the two signals.								
			signal	S				
			signal	S.				

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be < 15 % regardless of method requirements for CCC.

All %Ds must be \leq 20% regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of > 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were metN/A
Criteria were not met
and/or see below

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All_method	d_blank_meeth_	_method_speci	fic_criteria	
Field/Equipmen				
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_field/trip/ed	quipment_blank	s_analyzed_wi	th_this_data_package	

All criteria were met _	_N/A
Criteria were not met	
and/or see below	

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
				¦	
			<u> </u>		
	'				

All criteria were metX
Criteria were not met
and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery. Matrix: solid/aqueous

SAMPLE ID		SURROGATE COMPOUND			ACTION			
Hexanol								
_All_surrogate_recoveries_and_retention_times_within_laboratory_control_limits								
QC Limits* (Aqueous)								
LL_to_UL	to	to	to	to				
QC Limits* (Solid-Low)								
LL_to_UL	to	to	to	to				
QC Limits* (Solid-Med)								
LL_to_UL	to	to	to	to				
1,2-DCA = 1,2-Dichlorome	thane-d4		TOL-d8 =	Toluene-d8				
DREM = Dibromofluorome				mofluorohenzen	۵			

- QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met	_X
Criteria were not met	
and/or see below	

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do no	t meet the	criteria.
--	------------	-----------

Sample ID:JB31283-15MS/-15MSD				Matrix/Level:Soil			
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION		
MS/MSD_recoveries_and_RPD_within_laboratory_control_limits							

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were metX
Criteria were not met
and/or see below

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Level/Unit:			
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION	

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

 $^{^{\}star}$ If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were metX	_
Criteria were not met	
and/or see below	

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCS ID	COMPOUND	% R	QC LIMIT					
Recoverie	Recoveries_within_laboratory_control_limits								
	_								

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were metX Criteria were not met and/or see below
X.	FIELD DUPLICATE PRECISION	
	Sample IDs:	Matrix:Soil

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
1	•	•	for this data package. N		
p	recision	. RPD within laborat	ory and generally accer	<u>otable co</u>	ntrol limits

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

D	ATA	RF\/	/IFW	WOR	KSH	FF	5

All criteria were metN/A
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE ACTION RANGE

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met _X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB28370-1

Methanol

RF = 14.34

[] = (151960)/(14.34)

= 10597 ppb OK

All criteria were met _X
Criteria were not met
and/or see below

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
	_ +	

B.	Percent Solids
	List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R) $\,$

	Project Number:JB28557
	Date:02/08/2013
REVIEW OF VOLATILE ORGATINE ORGATION The following guidelines for evaluating volatile organics was actions. This document will assist the reviewer in using prodecision and in better serving the needs of the data users. The USEPA data validation guidance documents in the following HW-24, Standard Operating Procedure for the Validation of 8260B (August, 2009-Revision 2), the USEPA National Concentration Organic Data Review (SOW SOM01.2 SOP H'National Functional Guidelines for Organic Data Review for Locational Functional Guidelines for Organic Data Review for Locational Guidelines for Organic Data Review for Locational Functional Fu	ANIC PACKAGE were created to delineate required validation of precedence assessed according to order of precedence: USEPA Region 2, SOF Organic Data Acquired using SW-846 Methodal Functional Guidelines for Low/Medium W-33, August 2009 – Revision 2), the USEPA ow Concentration Water (SOP HW-13, August r Evaluating Solid Waste, Physical/Chemical ally for Methods 8000/8015C are utilized. The new worksheets are from the primary guidance
The hardcopied (laboratory name) _Accutest reviewed and the quality control and performance data summa	data package received has been
Lab. Project/SDG No.:JB285571 Trip blank No.: Field blank No.: Equipment blank No.:	Sample matrix:Soil
Field duplicate No.:	
X Data CompletenessX Holding TimesN/A_ GC/MS TuningN/A_ Internal Standard PerformanceX BlanksX Surrogate RecoveriesX_ Matrix Spike/Matrix Spike Duplicate	X Laboratory Control SpikesX Field DuplicatesX CalibrationsX Compound IdentificationsX Compound QuantitationX Quantitation Limits
Overall Comments:_Selected_alcohols_(methanol_and_ _(DAI)	
Definition of Qualifiers: J- Estimated results U- Compound not detected R- Rejected data UJ- Estimated nondetect Reviewer:	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were metX
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION
JB28557-1R	02/08/13	03/20/13	-	Rejects (R) results
, ,				
The second of	-1 -140 16:	7 1 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		All manufes and main start
The sample analyzed 40 days after 7 days holding time expiration. All results are rejected.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples -7 days from sample collection for unpreserved samples, 4°C , no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 4°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

	All criteria were metN/A	
Criteria	were not met see below	

GC/MS T	UNING
---------	-------

If mass calibration	is in error, all associated (data are rejected.	
List	the	samples	affected:
If no, use profess qualified or rejecte		ine whether the associated data	should be accepted,
N/A_ BFB tunin	g was performed for every	12 hours of sample analysis.	
N/A_ The BFB	performance results were i	reviewed and found to be within the	e specified criteria.
The assessment of standard tuning Q	-	determine if the sample instrume	entation is within the

All criteria were metX
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	09/24/12
Dates of continuing calibration:_	03/20/13
Instrument ID numbers:	GCGH
Matrix/Level:Aqueous/mediur	n

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and	continu	uing cali	bration meets method sp signal	pecific requirements in at s.	least one of the two

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be < 15 % regardless of method requirements for CCC.

All %Ds must be < 20% regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _	_N/A
Criteria were not met	
and/or see below	

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All_method	d_blank_meeth_			<u> </u>
Field <u>/</u> Equipmen	t/Trip blank			
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_field/trip/ed	quipment_blank	s_analyzed_wi	th_this_data_package	

All criteria were metN/A	
Criteria were not met	
and/or see below	

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is > SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
			· 		
		<u> </u>			

All criteria were metX
Criteria were not met
and/or see below

ACTION

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

SURROGATE COMPOUND

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery. Matrix: solid/aqueous

Hexan	ol		Join Join 2		7.01.01.
_All_surrogate_recoveries	_and_retent	tion_times_wit	hin_laboratory_	control_limits	
	_				
QC Limits* (Aqueous)					
LL_to_UL QC Limits* (Solid-Low)	to	to	to	to	
LL_to_UL	to	to	to	to	
QC Limits* (Solid-Med)LL_to_UL	to	to	to	to	
1,2-DCA = 1,2-Dichlorome	thane-d4			Toluene-d8	_

- QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

SAMPLE ID

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met	_X
Criteria were not met	
and/or see below	

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:JB31283-15MS/-15MSD			Matrix/Level:Soil			
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION	
_MS/MSD_recoveries_and_RPD_within_laboratory_control_limits						

- QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met _	_X
Criteria were not met	
and/or see below	_

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

COMPOUND SAMPLE MS CONC. MSD CONC. % RSD ACTION CONC.	Sample ID:	IMPIE ID:			Matrix/Level/Unit:			
	COMPOUND		MS CONC.	MSD CONC.	% RSD	ACTION		

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were metX
Criteria were not met
and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCS ID	COMPOUND	% R	QC LIMIT
Recoveri	es_within_labo	ratory_control_limits		

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were metX Criteria were not met and/or see below
IX.	FIELD DUPLICATE PRECISION	
	Sample IDs:	Matrix:Soil

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
No field/laboratory duplicates analyzed for this data package. MS/MSD RPD used to assess					
			ory and generally accer		

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

Actions:

All criteria were metN/A	
Criteria were not met	
and/or see below	

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE ACTION RANGE

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 %	IS AREA > + 100%
		TO – 50%	
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were metX	
Criteria were not met	
and/or see below	

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB28557-1

Hexanol

RF = 106.5

[] = (636552)/(106.5)

= 5977 ppb OK

All criteria were metX
Criteria were not met
and/or see below

XII.	MILLAN	ATITIL.	TIAN	LIMIT	C
AII.	WUAI	4 I I I <i>F</i>	เบเบเง		O

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION
		
<u> </u>		
		· · · · · · · · · · · · · · · · · · ·

B.	Percent Solids			
	List samples which have	≤ 50 % solids		
Actions:				
ACIOHS.	•			

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ) If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

		er:JB28557
		02/8/2013
REVIEW OF VOLATILE ORGATINE The following guidelines for evaluating volatile organics was actions. This document will assist the reviewer in using prodecision and in better serving the needs of the data users. The USEPA data validation guidance documents in the following HW-24, Standard Operating Procedure for the Validation of 8260B (August, 2009-Revision 2), the USEPA National Concentration Organic Data Review (SOW SOM01.2 SOP HINATIONAL PROVINCIAL PROVINC	Date:ANIC PACKAGE were created to ofessional judgm ne sample results order of precede Organic Data Acc al Functional (W-33, August 20 ow Concentration or Evaluating Sol cally for Methods ew worksheets a	delineate required validation nent to make more informed as were assessed according to nce: USEPA Region 2, SOP quired using SW-846 Method Guidelines for Low/Medium 09 – Revision 2), the USEPA Water (SOP HW-13, August, id Waste, Physical/Chemical 8000/8260B are utilized. The re from the primary guidance package received has been
reviewed and the quality control and performance data summa	arized. The data r	review for VOCs included:
Lab. Project/SDG No.:JB28557 No. of Samples:1	_ Sample ma	trix:Soil
Trip blank No.: Field blank No.: Equipment blank No.: Field duplicate No.:		
X Data CompletenessX Holding TimesX GC/MS TuningX Internal Standard PerformanceX BlanksX_ Surrogate RecoveriesX Matrix Spike/Matrix Spike Duplicate	X Field X Calil X Com X Com	
Overall Comments:_Selected_VOC's_by_SW846-8260B	3	
Definition of Qualifiers: J- Estimated results U- Compound not detected R- Rejected data UJ- Estimated nondetect Reviewer: Au au au au Date: 04/14/2013		

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
	_	

All criteria were metX
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

DATE SAMPLED	DATE ANALYZED	pН	ACTION	
			ļ	
			 	
Sample analyzed w	ithin method recommer	nded hold	ina time.	
				_
				DATE SAMPLED DATE ANALYZED pH ACTION Sample analyzed within method recommended holding time.

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.

Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 4°C - OK

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were metX	
Criteria were not met see below	

GC/MS TUNING			
The assessment of standard tuning Q	•	determine if the sample instrume	ntation is within the
_XThe BFB	performance results were r	reviewed and found to be within the	specified criteria.
_XBFB tunin	g was performed for every	12 hours of sample analysis.	
If no, use profess qualified or rejecte		ine whether the associated data s	should be accepted,
List	the	samples	affected:
If mass calibration	is in error, all associated of	data are rejected.	

All criteria were met _X
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	01/07/13
Dates of continuing calibration:_	02/15/13
Instrument ID numbers:	GCMSY
Matrix/Level:Aqueous/low	

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
		Initial an	d continuing calibration	meet method specific	criteria
		_			

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be < 15 % regardless of method requirements for CCC.

All %Ds must be < 20% regardless of method requirements for CCC.

It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of > 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r > 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were metN/A	
Criteria were not met	
and/or see below	

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL <i>i</i> Matrix	COMPOUND	CONCENTRATION UNITS
All_method			fic_criteria	
Field/Equipmen				
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_field/equip	ment/trip_blank	s_analyzed_wi	th_this_data_package	

All criteria were metN/A	
Criteria were not met	
and/or see below	

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
			<u> </u>		
		ļ —			
	<u> </u>				

All criteria were met __X__ Criteria were not met and/or see below ____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery. Matrix: solid/aqueous

SAMPLE ID		SUKKUGA	ACTION		
1	,2-DCA	DBFM	TOL-d8	BFB	
_All_surrogate_recov	veries_within	_laboratory_co	ntrol_limits		
					
QC Limits* (Aqueous	s)				
LL_to_UL	to_	to_	to	to	
QC Limits* (Solid-Lov	w)				
LL_to_UL	to	to_	to	to	_
QC Limits* (Solid-Me	ed)				
LL_to_UL	to	to	to	to	
1,2-DCA = 1,2-Dichlo	oromethane-	d4	TOL-d	8 = Toluene-d8	
DBFM = Dibromofluc		-		Bromofluoroben	zene

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

04 MBI # ID

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%. If anyone surrogate in a fraction shows < 10 % recovery.

All criteria were metX
Criteria were not met
and/or see below

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:JB28706-4MS/-4MSD				Matrix/Level:S	oil	
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION	
MS/MSD_recoveries_and_RPD_within_laboratory_control_limits						

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

^{*} QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

^{*} If QC limits are not available, use limits of 70 – 130 %.

All criteria were metX
Criteria were not met
and/or see below

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Level/Unit:		
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were metX
Criteria were not met
and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCS ID	COMPOUND	% R	QC LIMIT
Recoverie	s_within_labora	tory_control_limits		
				
			-	

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? $\underline{\text{Yes}}$ or No.

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were metN/A Criteria were not met and/or see below
IX.	FIELD DUPLICATE PRECISION	
	Sample IDs:	Matrix:

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 30% for aqueous samples, RPD \pm 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
_					
No field/laboratory duplicate analyzed with this data package. MS/MSD RPD used to assess					
p	recision.	RPD within laborate	ory and generally accep	table co	ntrol limits.

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _X
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +100% or -50% of the IS area in the associated calibration standard.
- * Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
	tandard_area_within_	•			
Actions:					

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were metX
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JB28557-1

Benzene RF = 1.095

[] = (9342)(50)/(223756)(1.095)

= 1.91 ppb OK

All criteria were metX
Criteria were not met
and/or see below

XII. (AUÇ	ITN	Tat	ION	LIMIT	ſS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

3.	Percent Solids		
	List samples which have	< 50 % solids	
Actions			
1000110		ample is 10-50%, estimate positive	e results (J) and nondetects (U.
	If the % solids of a soil sa (R)	ample is < 10%, estimate positive	results (J) and reject nondetect